US Army Corps of Engineers®
Engineer Research and Development Center

Levee Inspection System

Technology

The Levee Inspection System is a set of technologies that provides a tailored solution for levee inspection. Using a combination of Global Positioning System (GPS), Geographic Information Systems (GIS), Open Database Connectivity (ODBC), and Microsoft Access database software, the system operates on a laptop computer running Microsoft Windows 95, 98, NT, 2000, and Windows XP operating systems.

The application was developed as an extension to ArcView GIS and ArcView GIS Tracking Analyst available from Environmental Systems Research Institute, Inc. Data collected during an inspection can be analyzed and presented using the various tools available in ArcView GIS or other GIS software. All source code for the application is written in ArcView GIS Avenue programming language and can be modified to individual requirements.

Data management is conducted using a Microsoft Access database, and all information recorded in the Data Collection phase is stored in a database table. Microsoft Access software is not required for data collection, but is essential for database editing, queries, and report generation.

Problem

Destructive floods are costly. From 1991 through 2000 the United States suffered $45 billion in flood damage. During that same period, however, Corps of Engineers flood damage reduction measures prevented more than $208 billion in damage—82% of the damage that would have occurred if the protection were removed.

The Corps of Engineers has constructed about 10,500 miles of levees and floodwalls for flood damage reduction, most of which have been assigned to non-federal sponsors for operation and maintenance.

Levees must be maintained to provide adequate flood protection. Flooding is the most destructive and costly natural disaster in the United States.

Expected Cost To Implement

The Levee Inspection System software is free; however, it requires the following software (approximate cost: $2000) to operate: ArcView GIS v.3.2a or later; ArcView GIS Tracking Analyst v.1.0 and patch. Microsoft Access 2000 is not required for the data collection process, but is necessary for database setup, editing, and automated report generation.

Benefits/Savings

The Levee Inspection System allows users to collect real-time data in the field using common commercial GPS receivers that output a National Marine Electronics Association NMEA 0183 string. By using the GPS, the accuracy of data collection is enhanced and, through an automated alerting feature, allows the inspector to more easily find and verify the locations of deficiencies during subsequent inspections. Additional ease is incorporated into the data collection process by providing the inspector with data-entry tools to record the attributes of the deficiencies, enter remarks and recommended actions, and provide a rating and status.

The Levee Inspection System also provides tools for managing digital photos, thereby reducing the amount of time spent renaming, copying, and updating database records.

Status

The most recent versions of the levee inspection software, user's manual, and ArcView extensions are available at http://www.mvr.usace.army.mil/LeveeInspection/default.asp. A new version is being developed.

ERDC POC(s)

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Distribution Sources

Software can be downloaded at no cost from http://www.mvr.usace.army.mil/LeveeInspection/default.asp.

Available Documentation

Documentation is available from the Corps of Engineers Levee Inspection System Web site (http://www.mvr.usace.army.mil/LeveeInspection/Documents/UserManual_1-1.pdf).

Available Training

Training is not offered at this time.

Available Support

Primary technical support is available from Kevin Carlock, U.S. Army Engineer District, Rock Island; P.O. Box 2004; Rock Island, Illinois 61204-2004. Custom application development is available from Applied Data Consultants.